

CLAIMS

1. A method of determining a distance between a first device (100) and a second device (200), comprising,
5 at the first device,
transmitting (330) a signal comprising simultaneous first and second components, wherein the first component comprises a repeated first code and the second component comprises a repeated second code and the first and second codes are of unequal duration, and
10 at the second device:
receiving (260) the signal;
detecting (270, 275) the first and second codes;
determining (270, 275) from the detected first and second codes respective first and second indications of the distance;
15 comparing (280) the first and second indications of the distance; and
generating (282) a third indication of the distance in response to the first and second indications of the distance being equal within a predetermined tolerance.
- 20 2. A method as claimed in claim 1, wherein the respective durations of the first and second codes are proportional to respective numbers having a relative prime relationship.
3. A method as claimed in claim 1 or 2, further comprising
25 transmitting (230) the signal from the second device and at the first device receiving (160) the signal transmitted from the second device, wherein the transmitting at the first device comprises retransmitting (130) the signal received from the second device.

4. A method as claimed in claim 1, 2 or 3, wherein at least one of the first and second indications of distance is an indication of time of flight of the signal.

5. A system for determining distance comprising
a first device (100) having
means (330) for transmitting a signal comprising simultaneous first and second components, wherein the first component comprises a repeated first code and the second component comprises a repeated second code and the first and second codes are of unequal duration, and
a second device (200) having
means (260) for receiving the signal,
means (270, 275) for detecting the first and second codes,
means (270, 275) for determining from the detected first and second codes respective first and second indications of the distance,
means (280) for comparing the first and second indications of the distance, and
means (281) for generating a third indication of the distance in response to the first and second indications of the distance being equal within a predetermined tolerance.

6. A system as claimed in claim 5, wherein the respective durations of the first and second codes are proportional to respective numbers having a relative prime relationship.

7. A system as claimed in claim 5 or 6, the second device further comprising means (210, 215, 230) for generating and transmitting the signal, and the first device further comprising means (160) for receiving the signal transmitted by the second device and wherein the means for transmitting (130) is coupled to retransmit the signal received from the second device.

8. A system as claimed in claim 5, 6 or 7, wherein at least one of the first and second indications of distance is an indication of time of flight of the signal.

5 9. A device for determining distance, comprising
means (260) for receiving a signal comprising simultaneous first and second components, wherein the first component comprises a repeated first code and the second component comprises a repeated second code and the first and second codes are of unequal duration,
10 means (270, 275) for detecting the first and second codes,
means (270, 275) for determining from the detected first and second codes respective first and second indications of the propagation distance of the signal,
means (280) for comparing the first and second indications of the propagation
15 distance, and
means (281) for generating a third indication of the propagation distance in response to the first and second indications of the propagation distance being equal within a predetermined tolerance.

20 10. A device as claimed in claim 9, comprising means (210, 215, 220, 230) for generating and transmitting the signal .

11. A device as claimed in claim 10, wherein the respective durations of the first and second codes are proportional to respective numbers having a
25 relative prime relationship.

12. A device suitable for use in use in a system for measuring distance, comprising means (310, 315, 320, 330) for generating and transmitting a signal comprising simultaneous first and second components,
30 wherein the first component comprises a repeated first code and the second component comprises a repeated second code and the first and second codes are of unequal duration.

13. A device as claimed in claim 12, wherein the respective durations of the first and second codes are proportional to respective numbers having a relative prime relationship.

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14. A device as claimed in claim 12 or 13, wherein the means for generating and transmitting the signal comprising simultaneous first and second components further comprises means (410) for multiplying the first component by an in-phase local oscillator signal, means (430) for multiplying
10 the second component by a quadrature-phase local oscillator signal, and means (320) for summing the resulting products.